SHIELD FOR TRAILER COUPLER

RELATED APPLICATIONS

This application is a continuation-in-part of Application Number 10/156,266 filed May 28, 2002.

FIELD OF THE INVENTION

The present invention relates to vehicular trailers, and more specifically to covers for the hitch portions of vehicular trailers.

BACKGROUND OF THE INVENTION

The present invention provides a unique and multifunction cover or shield for a trailer coupler which alleviates two significant problems.

A trailer coupler, by definition, provides a means for coupling or attaching a trailer to a towing vehicle. Trailers have been and continue to be in widespread use for hauling a wide variety of cargos, e.g., boats. When trailers are detached from a towing vehicle they of course are at rest, and many trailers have a support means for supporting the forward portion of the trailer so that the trailer maintains substantially the same attitude about its pitch axis as it would have when attached to a towing vehicle. The trailer comprises in part a longitudinally-extending member. At the very forward end of said member is a coupler means which is adapted to be attached to a ball trailer hitch on the towing vehicle. The coupler means in most cases comprises an inverted cup-like member for receiving a ball trailer hitch, and the cup-like member typically has a horizontally extending rim or flange portion around the periphery thereof. The aforesaid

flange portion is relatively thin, e.g., one-eighth of an inch, and thus poses a serious safety hazard if once accidentally or otherwise bumps into it, which unfortunately, occurs far too frequently. The present invention solves this problem.

Another issue associated with trailer couplers is that they are exposed to the weather, both when the trailer is at rest detached from the towing vehicle, and also when the trailer is attached to the towing vehicle. The trailer coupler has some moving parts and further, usually there are auxiliary apparatus such as safety chains and electrical connecting wires which can be adversely affected by the weather and also by factors such as "kicked-up" stones or other debris from the roadway as the trailer is in forward motion with the towing vehicle. The present invention provides a weatherproof enclosure for the trailer coupler and associated auxiliary apparatus.

SUMMARY OF THE INVENTION

In broad terms, the present invention provides a cover and a shield for a trailer coupler having a coupler means mounted on the forward portion of a longitudinally extending member of a trailer. The coupler means is adapted to be attached to a ball trailer hitch on a towing vehicle. The cover specifically comprises an elongated, hollow tubular shield having a longitudinal fore and aft axis, a forward end, an aft end, a top, a bottom, port and starboard sides, a forward opening, and an aft opening. The shield is dimensioned or internally sized so as to receive the forward portion of the longitudinally extending member of the trailer and the coupler means mounted thereon. Thus, prior to the trailer being attached to the towing vehicle, the shield may be assembled with the trailer coupler the coupler means mounted thereon with the aft end of the shield being positioned aft of the coupler means and with the forward end of the shield being

positioned around the coupler means to thereby provide a protective covering around the coupler means and a substantial portion of the forward portion of the longitudinally-extending member of the trailer. Thus, both of the above-described problems are addressed and solved.

The forward opening of the shield is sized to receive a ball trailer hitch when the coupler means is attached to the trailer hitch. The shield, in the preferred embodiment, is fabricated from a flexible material which includes a layer of padding, and at least the outer surface, and preferably the inner surface, of the shield and is impervious to moisture. Also in the preferred embodiment, the forward end of the shield includes a pouch-like portion sized to snugly encompass and cover the coupler means.

In the preferred embodiment, the shield further includes a seam means extending longitudinally along the bottom of the shield from the aft opening forward towards the front opening. The seam means may be selectively manually opened to an open mode and/or closed to a closed mode so as to facilitate the installation of the shield onto the forward portion of said member and the coupler means mounted thereon.

In another aspect of the invention, the shield presents relatively large side surfaces suitable for displaying graphic material when installed on the trailer coupler.

Finally, the preferred embodiment of the invention includes strap means attached within the inside of the shield for providing a support function for auxiliary apparatus such as safety changes and electrical wire means.

DESCRIPTION OF THE DRAWINGS

Figure 1 is a plan view of the front portion of a trailer;

Figure 2 is an elevation view or side view of the apparatus depicted in Figure 1;

Figure 3 is a port-side elevational view of the front portion of a trailer with the safety shield mounted thereon;

Figures 4, 5, and 6 are cross-sectional views of the apparatus depicted in Figure 3 as viewed, respectively, along section lines 4-4, 5-5, and 6-6 of Figure 3.

Figures 7, 8, and 9 depict, respectively, layouts of the material 40, 50, and 30, used in fabricating the shield;

Figure 10 depicts the apparatus of Figure 3 attached to a ball trailer hitch of a towing vehicle; and

Figure 11 depicts an embodiment of the present invention wherein graphic indicia is displayed on side surfaces of the shield.

DETAILED DESCRIPTION OF THE INVENTION

The front portion of a typical trailer TR is depicted in Figures 1 and 2. The trailers have a longitudinally-extending member (see Figure 3 for a depiction of the longitudinal axis LA). For the trailer depicted, the longitudinally-extending member is a single beamlike member 10 with side braces 11 and 12. A vertically adjustable support member 15 passes through a gearbox 15' and at the lower end thereof has a support wheel 16 or equivalent for resting on the ground G when the trailer is detached from a towing vehicle, and which is moved upwardly out of contact with the ground when the trailer is attached to a towing vehicle as is depicted in Figure 10.

A coupler means is attached to the forward end of the beam 10. The coupler means comprises a bracket portion 19 attached with bolt means 19' and, at the forward end thereof is an inverted cup 20 sized to receive a ball of a hitch member H which is integrally attached to a

towing vehicle TV. A typical lever-type member 21 which is pivoted at 21' may be used for locking the inverted cup 20 to the ball B as is well know by those skilled in the art.

Referring to Figure 3, the unique cover/shield AA is shown in the "trailer at rest" mode, i.e., trailer not attached to a towing vehicle. In broad terms, the shield AA is an elongated, hollow, tubular device having a longitudinal fore and aft axis LA, a forward end 60, an aft end 61, a top 30T, a bottom 30B, port and starboard sides 30P and 30S (see Figures 4-6), a forward opening FO and an aft opening AO. As is clear from Figures 3-6 and 10, the shield AA is sufficiently dimensioned or internally sized so as to receive both the forward portion of member 10 of the trailer, as well as the coupler means 19-21 mounted thereon. Thus, the shield may be assembled with the trailer coupler and coupler means with the forward end of the shield being positioned around the coupler means and with the aft end of the shield being positioned aft of the coupler means. In the preferred embodiment of the invention the cover AA is configured to include, at forward end 60, a pouch-like portion 60' sized to snugly encompass the coupler means as is clearly shown in Figure 3. In this trailer-at-rest position, it is seen that the cover shield AA is totally encompassing the coupler means 20, with the forward opening FO of the shield AA well below the member 20.

The preferred embodiment of the invention provides a shield with a two-ply construction, i.e., an outer layer 30 and an inner layer 40 sandwiching therebetween padding material PD, all as is clearly depicted in Figure 5. Figures 9 and 7 respectively depict the material pieces 30 and 40 when laid out prior to fabrication, together with a member 50 shown in Figure 8, which is adapted to be part of the front opening FO upon final assembly. Referring to Figure 9, the surfaces of sides of the piece 30 are respectively (starting at top and proceeding clockwise) 30a-

30g and, correspondingly, for member 40, the sides or surfaces are 40a-40g. Member 50 shown in Figure 8 has end surfaces 50A and 50B, and side surfaces 50' and 50".

The forward and aft openings FO and AO are elasticized in the preferred embodiment to provide a snug fit.

To facilitate easy assembly and disassembly of the shield with the trailer coupler means, a seam means 70 is provided which extends longitudinally from the aft opening AO toward the front opening FO. The seam means 70 in the preferred embodiment is a hook-and-loop fastening arrangement with the co-acting surfaces being identified in Figure 5 by reference numerals 70P and 70S. The seam means 70 is configured so that it may be opened fully at the aft opening AO all the way to, but not including, the front opening FO.

An optional feature of the invention, but on that is included in the preferred embodiment, is to have a strap means 75 with two separate elements 75P and 75S shown in Figure 5 adapted to be connected together selectively so as to support auxiliary apparatus such as a safety chain SC shown clearly in Figures 3-6 and 10. A typical safety chain configuration is to have one end SC' of the chain connected to a bracket 24 on member 10, the other end SC" and a decoupling link SC''' being attached to a connector H", at the end H' of hitch H of the towing vehicle.

Thus, both of the above described problems are solved by the shield AA. The pouch 60' at the front of the shield provides a layer of protection around the sharp periphery 20' of cup 20 to prevent injuries. The shield AA provides an excellent protection for the coupler means with respect to weather and dynamic road factors. The support of auxiliary apparatus by strap 75 is an additional important feature of the invention.

In another embodiment of the invention depicted in Figure 11, the side portions 30P and 30S present relatively large and substantially vertical side surfaces 90. Any type of graphical

indicia 92 may be displayed on side surfaces 90 as desired. Graphical indicia 92 may include for example, but is not limited to, advertising messages or logos, instructions or warning information, or informational and decorative images. The graphical indicia 92 may be a separate member affixed by sewing, adhesives or any other means, or may be imprinted directly on the side surfaces 90 by printing, embossing, screen printing, embroidery, or any other suitable method.

While the preferred embodiment of the invention has been illustrated, it will be understood that variations maybe made by those skilled in the art without departing from the inventive concept. Accordingly, the invention is to be limited only by the scope of the following claims.